

September 3, 2009

The following comments were provided by Greg Devereaux, Regional Targets Advisory Committee (RTAC) member, for consideration by the committee.

General Comments

- **RTAC Recommendations.** A list of all the RTAC recommendations should be summarized in one place – right now its difficult to know exactly what RTAC is recommending because they recommendations are spread through the text. Summarizing them in one place would help chrystalize the report.
- **Scoping Plan, AB 32, SB 375 Quotes.** There are times when the report draws directly on the language of these documents. When this happens, the report should use quotes and provide a citation.
- **Context of target setting within the RTP – Air Conformity.** This report focuses largely on the GhG target setting—which it should. But it needs to acknowledge that this is part of a larger regional transportation plan that must also meet housing goals and federal air conformity standards. The RTAC must be careful about recommending actions for one that may conflict with the others. One of our guiding principles is to minimize administrative burdens by avoiding duplication.
- **Do an Overall Cite Check.** Also, when the report quotes or refers to specific language or duties in the bill, this should be cite-checked by your legal department to assure that the report tracks the language in AB 32 or SB 375. I found in one place where the language of SB 375 was “may” but the report used the word “required.”
- **Reorganization:** More should be put into the background section at the beginning to provide better context. For example, the explanation of the relationship of the SCS to APS is at the end of the current report, this should be at the beginning
- **Glossary.** The report should include a glossary for some of the terminology—particularly as it relates to modeling, to make it more accessible to non experts.
- **Key Concepts** – I am not sure how to do this, but in the final layout perhaps there is a way to use bolding or call outs to highlight the key concepts.
- **Need for a new “Rationale” Section V?** The explanation of how BMPs work and some of the other description in Section 4 (e.g., flexibility in entitlements section) are more explanations of RTAC thinking and related policy issues.

Working Draft RTAC Report
(August 28, 2009)

I. Summary of Regional Targets Advisory Committee Recommendations

II. Background

ARB Climate Change Scoping Plan

The Climate Change Scoping Plan, adopted December 2008, is the overarching framework for meeting the Global Warming Solutions Act of 2006's (AB 32) greenhouse gas emissions reduction goal of returning to the 1990 emissions level by 2020. The comprehensive Plan proposes actions for all sectors to reduce emissions, including a section specifically for regional passenger vehicle-related emissions. This section points specifically to SB 375 as the process for reducing greenhouse gas emissions through more sustainable land use and transportation planning.

In adopting the Scoping Plan Resolution, the Board stated its intent that the SB 375 greenhouse gas emission reduction targets would be the most ambitious achievable. The estimated reductions included in the Scoping Plan are expected to be replaced by the outcome of the Board's decision on SB 375 targets.

Further, the Board resolved that, as input to the SB 375 target setting process, the Regional Targets Advisory Committee (RTAC or the Committee) should recommend a method that would evaluate the full potential for reducing greenhouse gas emissions in each major region of the state.

Senate Bill 375 Requirements for Target Setting

SB 375 is landmark legislation that aligns regional land use, transportation, housing and greenhouse gas reduction planning efforts. It requires ARB to set greenhouse gas emission reduction targets for passenger vehicles and light trucks for 2020 and 2035. The targets are for the 18 Metropolitan Planning Organizations (MPOs) in California. MPOs are responsible for preparing Sustainable Community Strategies and, if needed, Alternative Planning Strategies, that will include the region's strategy for meeting the established targets. An APS is an alternative strategy that must show how the region can would, if implemented, meet the target if the SCS does not.

Prior to setting targets for a region, ARB is required to exchange technical information with each MPO and affected air districts. In establishing the targets, ARB must take into account greenhouse gas emission reductions to be achieved by improved vehicle emission standards, changes in the carbon-intensity of fuels and other measures it has approved that will reduce greenhouse gas emissions in affected regions. Together, the Scoping Plan calls for reduced reductions from vehicle emissions, low carbon fuel, efficiency, and transportation related targets to be approximately 56 MMT, or approximately 33 percent of the total reduction over baseline. As these factors may change, ARB may revise the targets every four years, and at a minimum, must update them every eight years.

The targets may be expressed in gross tons, tons per capita, tons per household, or in any other metric deemed appropriate by ARB. Additionally, each MPO may recommend a target for its region. Once regional plans that meet the targets are in place, SB 375 includes CEQA incentives, which allow for streamlined environmental review of projects that meet specific criteria outlined in the bill.

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Once the target is set, SB 375 requires MPOs to integrate their region's greenhouse gas emission reduction target for automobiles and light-duty trucks into their next RTP development process.

Under federal and state law, each of the 18 California MPOs are required to develop an RTP. SB 375 adds a new state requirement to include a sustainable communities strategy (SCS), which is the underlying land use allocation for the RTP. The SCS is a fourth element added to three other existing elements (policy, financial, and action) that constitute a region's long range RTP.

RTPs are approved by an MPO's board, along with a transportation conformity determination that ensures the region is on track to meet air quality requirements. The documents are then transmitted to the Federal Highway Administration. The RTP serves as one of the key documents used by the federal government to identify and fund transportation projects and programs in a region. Since the SCS is part of the RTP, the resulting document must comply with all applicable state and federal requirements, including financial constraint and the use of latest planning assumptions.

SB 375 requires an additional document, the Alternative Planning Strategy (APS), to be created by an MPO that has determined it will not reach its region's target through its SCS. The APS is a separate document and is not required to meet federal and state requirements for RTPs. The APS is meant to "bridge the gap" between the GHG emission reductions an SCS can achieve and a region's target, set by ARB.

While an APS may be developed due to funding limitations it is important to note that a region may need to develop an APS for non-fiscal reasons. For example, a region seeking to implement a pricing strategy will likely need a legislative amendment before that strategy could be included in an SCS.

Finally, SB 375 sets out a very limited role for ARB in determining how the targets will be achieved. Specifically, after assigning targets, ARB's role is to assure the accuracy of the methodology selected by each MPO and then to determine whether the SCS, or in the alternative, the APS, would achieve the target if implemented. Thus, the policy choices relating to how the MPO will achieve the target are left to the region.

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Regional Targets Advisory Committee (RTAC) Role

ARB appointed members to the RTAC in January 2009. The Committee met monthly from February through September, including several additional bi-monthly meetings for a total of 14 meetings. It is comprised of a diverse group of 21 individuals representing affected stakeholders including MPOs; air districts; local governments; transportation agencies; homebuilders; environmental, planning, affordable housing and environmental justice organizations and members of the public. Appointed members are listed in Appendix A. The Committee's specific charge is to prepare a report for ARB's consideration that recommends factors to be considered and methodologies to be used for regional target setting. In doing so, the Committee ~~is required to~~ may consider relevant issues, including data needs, modeling techniques, growth forecasts, impacts of regional jobs-housing balance on interregional travel and greenhouse gas emissions, economic and demographic trends, magnitude of greenhouse gas reduction benefits from a variety of land use and transportation strategies and appropriate methods to describe regional targets and to monitor performance in attaining those targets. All information and correspondence associated with the Committee is publicly available on ARB's website at <http://www.arb.ca.gov/cc/sb375/sb375.htm>.

RTAC Guiding Principles

To help frame the context in which it would proceed throughout its meetings, the

Committee established a set of guiding principles at its March 4, 2009 meeting. The Committee agreed to the following principles:

- Minimize administrative burden in program implementation or tracking;
- Encourage regional and sub-regional cooperation rather than competition;
- Avoid conflicting statutory requirements, if any;
- Maximize integrated system-approach allowable under the law;
- Maximize co-benefits of air quality, mobility, and economic growth;
- Maximize transparency and clarity to gain public support;
- Use metrics that measure cost-effectiveness.
- The setting of GHG reduction targets and the development of Sustainable Communities or Alternative Planning Strategies should help to shape and support, not stop or impede, the growth of the state and its economy and the provision of housing for its people.
- Support more resources for transit and infrastructure consistent with SCS and APS development

OMITTED _ KEY RTAC QUESTIONS

III. Regional Targets Advisory Committee Recommendations

Development of Tools^[h4]

[NOTE: The following introductory section was developed by ARB staff to integrate the concepts provided by the various RTAC subcommittee members assisting in the document write-up.]

As ARB undertakes the target setting process, the Committee has identified and recommends the development and use of several tools that we believe will be instrumental in implementing SB 375.

The most immediate need is the development of a list of best management practices, or BMPs. This BMP list should include data from empirical studies that identifies the magnitude of greenhouse gas reductions that may be achieved through implementation of the policies or practices. The list of BMPs would not be an exclusive list of BMPs. Indeed, regions would be free to incorporate other practices into their SCS or APS to the extent that they can show how much GhG emission reductions are likely to occur.

Nevertheless, a pre-developed list of BMP's will be a useful reference point for MPOs. We recommend ARB initiate an interagency agreement with the University of California to produce a list this within the next 4-6 months. The BMP list will assist local and regional governments in evaluating which policies to implement and help inform ARB in the target setting process.

The Committee also recommends ARB undertake an effort to convert the BMP list into a simple analytical tool (i.e. calculator, SST, sketch planning tool, etc.) that could provide a sketch-level assessment of how multiple policies would interact to reduce GHG emissions within a region. This sketch-level functionality would enhance ARB's target setting process and would assist MPOs in model and scenario development. Based on discussions with model practitioners and academic experts, however, it is unclear whether a sketch-level tool could be fully developed in time to serve as the sole analytical tool in ARB's target setting process. Nevertheless, the Committee believes strongly in the utility of a simple analytical tool both for near-term target setting and

longer term local planning and implementation.

Finally, the Committee recognizes that travel demand models, including off-model post-processors, are essential parts of the regional transportation planning process. Accordingly, any simple analytic tool that is created should be done so that it is easily compatible with existing travel demand models employed by the 18 MPOs.

Modeling provides the ability to estimate the aggregate impacts of implementing multiple land use and transportation policies and practices. Since the Committee begins with the assumption that models will be used throughout SB 375 implementation, our recommendations focus primarily on regional and statewide model transparency, consistency, and plans for improvement.

To some degree, the work of the Committee over the past eight months has already initiated the development of pieces of each of these tools. The RTAC has requested information from MPOs on their modeling capabilities and planning scenarios, recommended and described the role and function of empirical data, and discussed lists of policies and practices that may serve as the foundation of a BMP list.

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Target Setting

In general, the Committee recommends that ARB use all of the tools and information at its disposal in developing and setting the regional targets under SB 375 for each MPO region. However, as evidenced by discussions at many RTAC meetings, the sophistication and capabilities of each MPO to use these tools differ widely throughout the state. In light of this, we recommend that ARB maintain flexibility in its expectation of the degree to which it relies on data and information derived from each tool in the target setting process. For instance, the larger, ~~more sophisticated~~ regions have the clear capability of using advanced modeling tools with more sophisticated techniques to capture the impacts of land use and transportation strategies. In these cases, it could be ARB's expectation that the target setting process relies heavily on modeled outputs and scenarios ~~in that can also be used in~~ combination with BMPs. Conversely, in smaller regions with less sophisticated modeling, ARB may need to rely more heavily on the BMP list or sketch planning tool to understand the impacts of greenhouse gas reduction policies in those regions and set targets accordingly.

Target Meeting

The Committee understands and expects that with SB 375 implementation, the science and data underlying land use and transportation planning will evolve and improve rapidly. As a result, we recognize that the tools and information ARB will have for setting targets by September 2010, may be different, depending on each region's schedule, from the tools and information that MPOs will have when they demonstrate how they will meet their targets. The decision regarding which tools are most appropriate for how a region meets its target rests with each region, and must be based on the capability of the region when it develops its strategy.

It is crucial that ARB, MPOs, and other stakeholders address this reality and design a process that can incorporate new tools and data as soon as they come available and can reconcile existing targets and plans with the new information. The Committee encourages the development of the empirical literature given the clear need for more empirical studies, and recommends that any new information be incorporated as it becomes available. For instance, as regional and statewide model capabilities improve, those improvements should be ~~immediately~~ applicable to the next RTP. region's strategy for

~~meeting SB 375 targets — a region should not wait until its target is updated to incorporate enhanced modeling into its demonstration of how it will meet its targets.~~

As ARB staff proceeds into the next phase of SB 375 implementation, we recommend that ARB continue to maintain its high degree of transparency throughout the target setting process and beyond. As described in more detail below, ARB interactions with all stakeholders are key to the target setting process and to the success of the methods recommended by this Committee.

Target Setting Process

1. MPO/ARB Interaction

SB 375 encourages a high level of ARB interaction with key stakeholders throughout the target setting process as evidenced by the representation on the RTAC as well as specific direction for ARB to exchange technical data with MPOs and the affected air districts. The success of the target setting process, therefore, is described best through the collaborations that must continue to occur. The interaction between ARB and the MPOs is particularly critical given that the planning requirements of SB 375 fall to the MPOs to carry out.

~~To ensure effective and efficient communication between ARB and the MPOs between now and September 2010, the Committee recommends the following process as a way to set the level of expectation about how that interaction could occur.~~

The proposed process for setting greenhouse gas emission targets under SB 375 will involve collaboration among the staffs of the MPOs and ARB, with support from Caltrans regarding modeling and RTP planning guidance. Technical input may also be solicited from other agencies, such as FHWA, FTA, and EPA.

It is also acknowledged that the process set forth below will require direct participation and buy-in from local jurisdictions, county transportation commissions (particularly for the SCAG region), and other major stakeholders. The MPO / ARB interactions and the emission reduction target setting cannot be accomplished without such a “bottom-up” process.

To ensure effective and efficient communication between ARB and the MPOs between now and September 2010, the Committee recommends the following process as a way to set the level of expectation about how that interaction could occur.

Step 1 MPOs would prepare an analysis of their adopted fiscally constrained RTP, which also includes its assessment of where and of what intensity future land use can reasonably occur. The analysis would include estimates of their GHG gas emission levels at a base year, as well as in 2020 and 2035 (e.g., for defined “No Project” and “Project” alternatives included in an RTP EIR or other related assessment), using existing travel demand models. The MPO staffs would work together with ARB staff to ensure that consistent long-range planning assumptions are used in this analysis, including:

- Existing and forecasted fuel prices and auto operating costs
- Reasonably available federal and state revenue sources
- ARB EMFAC inputs that include fleet mix and auto fuel efficiency standards

Step 2 ARB staff would use the results from Step 1 to compile GHG emission

estimates for each of the MPOs individually in the base year as well as years 2020 and 2035 ("target years"), and would extrapolate those results to statewide levels for those years. ARB staff would meet with MPO staffs to share those results, which would provide a "baseline" for further analysis to compare additional potential GHG emission reductions.

Step 3 ARB staff and MPO staff would next develop parameters for preparation of alternative scenarios to test the effectiveness of various approaches for the 2020 and 2035 target years that would lead to more ambitious GHG reductions in those years as compared to the baseline results. The measures to be incorporated into these alternative scenarios may include:

- Increased transportation funding and system investments in modes that will reduce GHG emissions, such as public transit, rail transportation, non-motorized transportation, and the like

- Shifts towards better land use / transportation integration, through means such as funding for supportive local infrastructure near public transit (e.g., smart growth incentive programs), and funding for regionally coordinated preservation of natural areas

- Increased the use of transportation demand management measures to reduce single-occupant vehicle (SOV) travel demand

- Increased transportation systems management measures that will improve system efficiency

- Various pricing options, including but not limited to express lanes, parking, and various fuel taxes

- Acceleration of more fuel efficient/clean fuels autos into the fleet mix

In identifying the measures to be used in developing these alternative scenarios, MPO staffs and ARB staff will use information from existing scenario assessments, including application of the fiscal constraint and reasonable occurrence tests imposed under the federal air conformity analysis, and, whenever possible, cost-effectiveness studies wherever possible.

In this step, the MPO staffs and ARB staff would also determine the outputs that should be obtained (from existing scenario assessments or new assessments derived with existing travel demand models, off-model tools or with sketch planning analyses), which may include:

- GHG levels at target years

- Transportation performance measures

- Economic performance measures

- Other environmental performance measures

- Social equity performance measures

Step 4 MPO staffs would analyze the alternative scenarios using a sketch planning tool or other acceptable means, and would forward the results to ARB staff, which would compile the results and discuss them with MPO staffs. At this time, an MPO may also submit a formal request for a regional target pursuant to provisions of SB 375.

Step 5 ARB staff would use the results compiled in Step 4, combined with review of empirical studies and other relevant information that relates to passenger vehicles and light truck GHG emissions (including new auto fuel efficiency standards and clean fuels), to prepare a recommendation

on a preliminary statewide target and regional targets, for review and comment by the MPO staffs and other participants.

Step 6 ARB staff would consider MPO data, policies and other empirical evidence, and recommend draft statewide and regional targets to the Board. RTAC recommends that the ARB apply its ambitious achievable charge in a way that will allow many MPOs to achieve its target through an SCS and some through the adoption of an APS—sometimes referred to as a “grade on a curve” approach

The process outlined above will require a significant effort by all participants within a relatively short period of time in order to allow ARB staff to submit draft targets to its Board by June 30, 2010 in accordance with SB 375. Therefore, it is recommended that a specific schedule be developed by the participants, based on the following key milestones:

Steps 1 through 4 should be completed by April 30, 2010; and
Steps 5 and 6 should be completed by June 30, 2010.

2. Expert Consultation

The Committee believes that the input of experts in land use and transportation, especially experts in the academic community, will be critical to the success of the SB 375 implementation.

Specifically, the Committee recommends that ARB work with academic panel of experts that includes academics and practioners from the land use and transportation sectors to develop a list of BMPs that can support both target setting and MPO planning. The initial draft list of this Reviewed BMPs list is is needed by January 2010 for MPO^[h12]s to use in their scenario

development as part of target setting. This information will help inform decisions on key policies for inclusion in MPO scenarios during target setting and MPO strategies to meet the target. It will-can also be a central component in the evaluation of the MPO scenarios and modeling outputs. The list should be supported by the research literature. If feasible and where supported by available data, the list should include elasticities associated with the BMPs. At a minimum, ARB should work with the academic-panel of experts to identify a range or general scale of the possible GHG benefits of the BMPs.

Once the BMP list is developed, further panel review by experts of any the analytical tools developed from the BMP list, including calculators or sketch tools, will be needed. This review is needed to ensure that the tools appropriately reflect the impacts suggested by the data and to identify future research needs to improve empirical data and the tools.

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~~Finally, given that travel demand models, including off-model post-processors, will play a central role in MPO demonstrations that their plans meet SB 375 targets, the Committee recommends that ARB consult with land use and transportation modeling experts during its review of MPOs analyses. The Committee believes this input is~~

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~~critical to supplement ARB existing technical capabilities. The input will help ARB understand how to assess the MPOs technical assessments of impacts of the its policies on the diverse land use and transportation environment in the State.~~

3. ARB Stakeholder Process Omitted

4. State Agency Interaction

The Committee recommends that ARB continue to work closely with other state Agencies_ that have a key role in land use and transportation planning to coordinate strategies so that they do not conflict with other state goals and priorities. The credibility of state programs is diminished when such conflicts occur.

Currently, the California Transportation Commission (CTC) is working with ARB and the Department of Transportation (Caltrans) to update the RTP guidelines. This update is meant to ensure that RTP guidelines appropriately address changes to RTP documents, such as the inclusion of a sustainable communities strategy, and that current MPO modeling practices begin planning for necessary improvements to properly evaluate the impact certain policies will have on GHG emissions for a region. In addition to participating in these efforts, Caltrans maintains the statewide transportation model, which includes interregional travel.

The Department of Housing and Community Development (HCD) is responsible for ensuring the housing elements of sustainable communities strategies meet state requirements through the Regional Housing Needs Assessment (RHNA) process. As the planning and CEQA experts in the state, the Governor's Office of Planning and Research's (OPR's) involvement is important to implementation statewide.

Target Setting Methods

1. Use of Empirical Studies

[h16] Ultimately, RTAC is charged with helping CARB to accurately predict future MPO performance. Specifically, CARB wants to know *what reductions in GHG are possible from changes in land use, transportation infrastructure and other transportation policies over a given period of time.* CARB, RTAC members, cities, MPOs and members of the public all have a vested interest in getting the answer to that question right. Along with travel models and best management practices, empirical studies have a vital role to play

11 in helping to answer this question. They can help define not only the expected range of VMT and GHG reduction that might result from various land use and transportation strategies, but also the series of strategies that planning agencies throughout the country have found to be ambitious and achievable.

What are empirical studies?

In the SB 375 context, the relevant empirical evidence consists of a set of cause-and-effect relationships observed to occur in real-world situations. The “causes” or inputs include land use strategies such as infill development, development mix, density, urban design (4Ds) and transportation strategies such as pricing, incentives, service improvements and other forms of TDM. The observed “effects” or outputs are changes in transportation system use over time, measured through empirical data that includes local, regional and state road and highway traffic counts, smog check odometer readings, transit ridership counts, household travel surveys, gasoline consumption data, bridge toll data, and observed counts of bicycle and pedestrian activity.

Fortunately, significant attention has been paid to this subject in the scientific literature, and the expert panel that the RTAC has discussed convening will have ample work to draw from in their survey. At a minimum, the documents that CARB and the expert panel should review include the following:

Growing Cooler – The Evidence on Urban development and Climate Change, ULI, 2008

Moving Cooler – An Analysis of Transportation Strategies to Reduce Greenhouse Gas Emissions, 2009

Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?, McKinsey & Co, 2007

Smart Growth INDEX Method of Estimating Travel Impacts from Land-Use Changes, US EPA, 2001

Improved Methods of Estimating Trip Generation at Mixed Use Development, US EPA, 2009

Recommended Practice for Quantifying Greenhouse Gas Emissions from Transit, APTA, 2009

Traveler Response to Transportation System Change, TRB, 2005

Effects of TOD on Housing, Parking and Travel, TCRP 128, 2008

Assessment of Models and Tools for Estimating Smart Growth Trip Generation, Caltrans, 2007

Transportation Analysis Report Guidelines, Caltrans, 2009

Smart Growth Trip Generation and Parking Generation, SANDAG, 2009

SACSIM 4D Model Elasticity Update, SACOG, 2009

California Neighborhood Electric Vehicle (NEV) Plans, Lincoln and Rancho Mission Viejo, 2007

Understanding How Individuals Make Travel and Location Decisions, TCRP 123, 2008

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A Review of the International Modeling Literature: Transit, Land Use, and Auto Pricing Strategies to Reduce Vehicle Miles Traveled and Greenhouse Gas Emissions, Rodier, 2008 (cited by CARB 2009)

Why should CARB consider empirical studies?

Empirical studies represent the only observations we have of *actual* travel behavior. When combined with information about transportation infrastructure investments, pricing, and other policy decisions, empirical data can be used to derive elasticity values for the impacts of certain factors on VMT, GHGs and other metrics of concern. An elasticity is a percentage change in one variable with respect to a one percent change in another variable, such as the percentage change in VMT for each percent change in development density. These elasticities can then help to inform the setting of the targets and the evaluation of various scenarios for the SCS. MPOs can use these elasticities to better understand how various policy or investment changes affect VMT and GHGs.

How should CARB, the RTAC and the MPOs use empirical studies?

Empirical evidence lends itself to a variety of uses. Specifically, RTAC recommends the following:

1. CARB can use empirical studies as one means to estimate what order of magnitude of GHG reductions are possible from various policies in California's regions in 10, 20 and 30 years as part of their process to complete [Step 1 – Draft uniform statewide reduction targets](#). As an example, [the City of Stockholm](#) instituted a pilot program for congestion charging in 2006 which reduced carbon emissions by 14 percent in the central city, and up to 3 percent citywide¹. CARB should consider what the empirical data say is possible, along with estimates from travel models and documented quantified experience along with other best management practices when completing Step 1.

2. Empirical evidence can also be used to estimate the magnitude of co-benefits of implementing SCSs. Many RTAC members have discussed the importance of making the SB 375 process transparent and understandable to the public. In the aforementioned [Stockholm](#) experience, this single policy reduced injuries by up to 10 percent and reduced the average morning commute by almost an hour in the first year of implementation. These co-benefits can help to engage the public in the planning process and bring to life anticipated real-world impacts of particular policies under consideration.

3. The RTAC has had extensive discussions about the importance of improving regional travel models. During the August 5th meeting, the RTAC agreed that a combination of modeling and “off-model” approaches would be used to set and demonstrate attainment of GHG targets. One concept which has received support is

for a panel of experts to review each MPO’s travel model to verify proper performance. The expert panel would derive elasticity values from the empirical evidence, appropriate to each region, and create anticipated sensitivities for each regional model. As an example, in his 2008 paper, *CO2 Reductions Attributable to Smart Growth in California*, Ewing estimated that the elasticity of VMT with respect to highway lane miles is .46, meaning that for every one percent increase in the number of highway lane miles, VMT is driven up .46%. The expert panel would deliver a list of elasticity values to the MPOs, and then work collaboratively to determine that the models are generating the right answers, given the expected values. For factors that the model is not sensitive to, post processors, or other off model adjustments should be used. For example, certain regional travel demand models may be unable to predict the impacts of road pricing on VMT. In this case, the MPOs would adjust the model outputs with the region-appropriate elasticity values identified by the expert panel to be reasonable representations of the effects of road pricing. In the longer term, the models could be enhanced to include the appropriate sensitivities to pricing, as discussed in recommendation #5.

4. Any Best Management Practices (BMP) approach will rely on empirical evidence to create a Simple Spreadsheet Tool (SST). Similar to the travel model post processors, the BMP list attempts to predict the impact of various policy and investment decisions on relevant metrics. The expert panel should review the literature and derive the most region-appropriate elasticity values possible, including any interaction between the various factors. The Moving Cooler document will be of particular value in this effort.

The legislature recently appropriated \$12M in Proposition 84 funding for data improvement and modeling to assist with SB 375 implementation. The Strategic Growth Council is considering allocating \$2M for creation of a statewide travel model that will both attempt to model inter-regional travel as well as serve as a means to “ground truth” the output of the regional models. Empirical evidence should be used to calibrate the statewide model and enhance and validate the regional travel models. For example, Los Angeles’ Orange Line, which opened in 2005, exceeded its ridership projections for 2020 within 7 months of opening². Observations of actual behavior responses to transportation investments should continually be used to refine and recalibrate model predictions.

2. Use of Modeling

SB375 is one of many legislative or regulatory initiatives [which-that](#) confer benefit today, in return for promised performance in the future. The benefits in question for SB375 include: CEQA relief for certain projects, [the alignment of transportation and housing](#)

| [processes](#)<<others...>>; the future performance is a reduction in greenhouse gas emissions. By necessity, initiatives of this sort require methods for forecasting future conditions, based on data available and policy commitments made today. Ideally, the forecasting methods are objective, scientifically-

based, transparent, understandable to policy makers and the public, and fair to regions of different types and of different capabilities in terms of policy analysis.

Meeting all these terms is a tall order, especially for the subject area of SB375: the interaction of land use and transportation, and the ability to influence the amount and type of travel through land use and transportation policies. We know from a growing body of research on the subject that many policies have the potential to influence travel. We also know that many confounding factors (e.g. demographics, geography, history, etc.) result in differing results in different regions from ostensibly the same or very similar policies.

This section of the report summarizes the research and discussions on the use of travel demand models and other methods which took place at the RTAC, and lays out a proposed approach for using models and other methods for SB375 target setting and later implementation.

In this section, “travel demand models” refers to the computer models currently in use at MPO’s for travel forecasting, ranging from relatively simple “four-step” models to more sophisticated, activity-based simulation models. “Other modeling methods” refer in general to tools which either augment or replace travel demand models, and are likely to be simplified, spreadsheet-based tools.

Modeling in the SB375 legislation

In the text of SB375, travel demand models or modeling are mentioned fourteen times, including in the subject line of the bill itself. Within the bill, there are three primary threads of discussion and reference to travel demand models and modeling:

- Development of guidelines for travel demand models to be developed by the California Transportation Commission, in consultation with other interested parties.

- Use of models in analysis of land use and transportation policy.

- Provision of information to the public on the methods and assumptions used in travel demand modeling, and the results of that work for SCS or APS development.

Each of the eighteen MPO’s in California uses and maintains a travel demand model for development and evaluation of its RTP; if ambient air quality does not conform to federal air quality standards, the travel demand model, along with associated emissions models, is also used for evaluation of progress towards these standards in the future. All MPO’s have staff assigned to maintenance and operation of their travel demand models, though with widely varying levels, and all periodically use consultants and outside contractors to periodically update and improve their travel demand modeling tools. Given the resources which currently are devoted to travel demand modeling, and their use in land use and transportation planning historically, it is logical that the long term investment in analysis capabilities by MPO’s be leveraged for implementation of SB375.

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Although the bill referred to travel demand models frequently, parts of the bill presaged later discussions of SB375 implementation, by recognizing that limitations to travel demand models may require that other methods be used. For example, if travel demand models in use are unable to predict mode splits, the bill allows that other

means may be used [§145221.1(a)(4)].

RTAC discussions on travel demand models

In part because of the reference to travel demand models and modeling in SB375, a considerable amount of research on and discussion of travel demand models in use by California MPO's was undertaken by the RTAC, with assistance from ARB and MPO agency staff. This research and discussion focused on two major implementation issues:

- The potential role for models to inform target setting
- The role for models in SCS and APS development

The range of discussion of use of models for target setting was defined primarily by the extent of reliance on travel demand models, as opposed the other methods. In the course of this discussion, a detailed self-assessment of travel demand models (as well as other subjects) was prepared and presented to the RTAC (see Appendix <<A>>). Because of the admitted limitations in capabilities of travel demand models in use by MPO's which emerged from this assessment, any discussion of relying completely on travel demand models for target setting ended, and the discussion shifted to whether to rely on travel demand models augmented with other methods, or to rely solely on other methods without any reference to travel demand models. Other methods discussed by the RTAC included:

"Points-for-Policy", wherein regions would accumulate a pre-defined number of points for commitments to implement specific policies known to reduce GHG emissions. Under this system, targets would be set as points, and not as a specific travel or emissions metric.

- o Advantages: Simplicity; transparency; may include a wide range of policies
- o Disadvantages: Difficult to account for variation in policy effects; no accounting for interaction or overlap between multiple policies; no estimate of quantitative effects of policy

"Best Management Practices" or "BMP", wherein a comprehensive list of GHG reduction policies would be assembled, and the most likely GHG reduction associated with each policy would be determined. In this case the target would be a specific travel or emissions metric, and the BMP tool would be used to estimate the total change to the metric based on commitments to implement a set of policies in a region.

- o Advantages: Potential simplicity and transparency; may include a wide range of policies

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- o Disadvantages: Difficult to account for cross-regional variation in policy effects; very difficult to account for interaction or overlap between multiple policies.

"Simplified standardized tool" or "SST", which falls somewhere between a BMP and a fully functional travel demand model. The SST would include extensive input data for each region, but without the spatial detail which is possible with a travel demand model. The SST would include a comprehensive set of elasticities or other factors to be applied to the input data, and compute the most likely GHG reductions from implementation of selected policies, in combination.

- o Advantages: May accounts for differences in regional context; may include a wide range of policies; potentially more transparent than travel demand model.

- o Disadvantages: Input data may be very complicated, difficult to assemble; difficult to account for interaction or overlap between multiple policies

"Post processor tool", which differs from the above three in that it would be

applied to the outputs of a travel demand model, and would adjust those outputs to reflect areas where the model lacks capability, or is insensitive to a particular policy or factor. The most commonly referred to post-processor in the RTAC discussions was a “D’s” post-processor, but post-processors could be developed for other non-D factors, too.

- o Advantages: Takes advantage of existing travel models in use; expands the range of policies which can be analyzed.

- o Disadvantages: May be difficult to tailor to specific travel models; difficult to standardize across the state.

Although all of these named methods were discussed and referred to as distinct entities, large areas of overlap between the methods exist, and depending on the level of detail included in each method, the differences between some of them may disappear. For example, if the “points” in a points-for-policy method were defined as, say, percentage reductions in GHG emissions likely for specific policies, the differences between a points-for-policy method and a BMP method may disappear. Likewise, if one of the inputs to an SST is aggregated outputs of a travel demand model, the SST may be virtually identical to a post-processor tool.

Proposed guidelines on use of models for SB375

Use of travel demand models and other methods for SB375 implementation includes three steps: 1) Assessment and documentation of existing travel demand model capability and sensitivity; 2) development of a model improvement program which addresses identified modeling needs by the second round of SCS/APS development; and 3) development of short range improvements and other methods to address modeling needs for first round of SCS/APS development, and potentially for MPO proposals of their reduction targets.

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Travel model assessment and documentation

SB375 requires that MPO’s “...shall disseminate the methodology, results, and key assumptions of whichever travel demand models it uses in a way that would be useable and understandable to the public” [§ 14522.2(a)]. This step in the guidelines is intended to address this section of the bill, as well as identify areas of needed improvements to travel demand models. The assessment should cover the travel demand model factors and policies identified in the “MPO Self-Assessment of Current Model Capacity and Data Collection Programs” presented to the RTAC in May 2009 (Appendix <<A>>).

The assessment and documentation required in this step may be a completely new document, if no such documentation exists for and MPO travel demand model. If the MPO has prepared documentation of its travel demand model with the results of sensitivity tests of each factor or variable, no new documentation would be required. If existing documentation is highly technical in nature, a summary of the assessments and sensitivity testing should be prepared which would be more generally understandable by a non-technical audience.

Depending on the factor or policy, the assessment required in this section may include:

- Key validation statistics, showing the correspondence of the model prediction for a validation year to observed data.

- Results of experimental sensitivity tests, wherein a single factor or variable is adjusted higher and lower from its baseline value, with the corresponding changes in model output variables shown. Minimally, the outputs shown would be: total VMT; light-duty vehicle VMT; light-duty vehicle GHG or CO₂; total person trips; person trips by automobile modes; person trips by transit modes; and person trips by bike and walk modes.

Results of planning scenario tests, wherein the modeled results of planning scenarios are tabulated and correlated to show the overall sensitivity of the travel demand model to a combination of factors and policies included in the planning scenario.

Experimental sensitivity testing should be performed on all exogenous input variables (e.g. age, income, automobile operating costs) and for as many policy variables as are feasible given the structure and complexity of the model (e.g. transit fares, highway capacity, density, mix of use, pedestrian environment, transit proximity, etc.). The documentation of the sensitivity tests should identify the range of reasonable sensitivity based on research literature, and account for where in this range the travel demand model sensitivity falls. Ideally, the range of reasonable sensitivity to key factors and policy variables should be determined through a coordinated research synthesis and review process, the results of which would be a standard reference for all MPO's in the state.

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Where results of planning scenario tests are reported, the MPO must show a correspondence between the planning scenario test results and the experimental, single factor sensitivity testing. Part of this documentation should assess the degree of interaction of factors and policies (i.e. the difference between the sum of all scenario variables taken individually, and the total change in modeled results).

The assessment and documentation should identify areas where the model lacks capacity for analysis of a factor or policy, and any factors or policy for which the model sensitivities fall outside the range of results documented in research literature.

Ideally, the assessment should include an independent peer review of the MPO model system. If the assessment results in changes to the self-assessment reported to the RTAC in May 2009, this information should be provided to ARB staff.

Model improvement program

Based on the assessment described above, each MPO should develop a multi-year program of improvements needed to address any modeling needs. Improvements should describe the basic change which would be made to the MPO travel demand model, identify what data would be required to support the improvement, provide and order-of-magnitude cost estimates, and identify any phasing issues or dependencies on other projects in the program.

Phasing of the improvements should address the following timeframes: 1) what improvements might be implemented in time to affect an MPO-proposed GHG reduction target; 2) what improvements are possible to implement before the first SCS/APS development by the MPO; and 3) what improvements are possible to implement before the second SCS/APS development.

The MPO model improvement program need not identify improvements to allow for all key factors and policies to be fully and reasonably represented in their travel demand model. An MPO might not require a particular modeling capability, based on the range of policies the policy-makers are willing or able to consider.

Additional short range improvements or other methods

It is likely that many MPO's will not be able to identify projects to improve their travel demand models to address significant modeling needs prior to proposing their own GHG reduction target to ARB, or prior to the development of the first SCS/APS for the region. Additionally, structural limitations in the model may also require other methods to fully address a modeling need. Where either is the case, the MPO should prepare a

program of short range improvements and other methods to address this need prior to the development of its first SCS/APS.

Other methods could include a BMP, SST, or post-processor approach as described above. Other methods should rely on travel demand model outputs for all factors and
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policies where the model can be shown to be reasonably sensitive. If a capacity is represented in a travel demand model, but model sensitivity is not reasonable, the other method should be tailored to compensate for the insensitivity. If the capacity to model a policy or factor is absent from the travel demand model, the other method should be implemented to provide the needed capacity. However, where an other method is used to account for a missing travel model capability, the MPO must demonstrate a reasonable approach for ensuring that the other method does not double-count or over-estimate the likely impacts of the policy or factor.

3. Key Underlying Assumptions

The Committee recommends that ARB make known all key underlying assumptions that are used to set targets. The transparency of these assumptions will be critical to the information exchanges between ARB and MPOs as part of the target setting process, as well as in assessing the need for future target adjustments when the underlying assumptions change. It is especially important that ARB clearly document assumptions made with regards to current economic activity as it relates to current and future residential and commercial development, as well as assumptions made with regards to current and future levels of transit and local government funding. Assumptions on economic activity and funding levels will be fundamental to understanding the level of change needed to meet the targets. If assumptions on these items vary by region, ARB should indicate such and provide sufficient documentation throughout the SB 375 process.

4. Best Management Practices

Could this be consolidated with other sections

The proposed Best Management Practices (BMP) option has three main purposes:

1. To provide information to local jurisdictions that are making land use and transportation decision about which strategies are most cost-effective in reducing greenhouse gases;
2. To provide a simplified method that can be used in part for setting the SB 375 reduction target(s); and
3. To provide a tool that MPOs can use to develop SCS Plans and to demonstrate compliance with the reduction target(s). In particular, for those MPOs that have limited to no extensive transportation/land use modeling capabilities.

The BMP option would consist of a toolbox of available land use and transportation strategies for local planners to choose from in addressing the requirements of SB 375 and a calculator for determining the appropriate level of reduction that a local jurisdiction could achieve in implementing a particular strategy or set of strategies in their particular setting. This approach would allow local jurisdictions to make appropriate greenhouse gas reduction policy choices for SCS Plan development based on sound science while more sophisticated land use and transportation models are being developed and refined. The BMP option can serve as an initial screening tool that allows local
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decisions to be made and may also serve as a tool to facilitate the development of more

sophisticated transportation/land use models and measurement of implementation performance. Most importantly, it can enhance early implementation of BMPs under SB 375, which has a 25-year-plus horizon encompassing at least five to six rounds of Regional Transportation Plans (RTPs).

The BMP option also provides a tool that can be applied locally by planning commissions, city councils and county boards to successfully implement SCS strategies during their entitlement processes. Local boards and commissions are the front line that must implement SB375 as part of their everyday planning decisions. The BMP option provides transparency to the end-user and decision-maker providing relatively quick assessment of respective strategy benefits.

The following sections describe how this option can be designed and applied for SB375 target setting and compliance demonstration.

Approach

The toolbox (i.e. menu of strategies) and the calculator would be developed by a contractor to CARB with input from a statewide Technical Advisory Committee consisting of representatives from CARB, the MPOs, local jurisdictions, other technical experts, and academia.

It is envisioned that the toolbox will be based on:

- 1) consultation with MPOs,
- 2) a comprehensive literature review on land use and transportation strategies that have been implemented and demonstrated to have GHG reduction potential,
- 3) policies contained in current RTPs/congestion management plans (CMPs), and
- 4) input from its members, the consultant experts and the public.

The calculator, which would be similar to a carbon calculator, would be developed with user interface to estimate the combined effects of BMP strategies from the toolbox while accounting for regional differences. The calculator would be a simplified, standardized, spreadsheet tool for evaluating interactions among BMPs. In addition to selecting various BMPs to test, users would provide other related land use and transportation information about the area being analyzed such as whether the area is rural, urban, or suburban; employment density in urban core; estimated share of work trips made by automobile; or total seat-hours of transit service per weekday per capita. The calculator would in turn perform the VMT and GHG reduction estimates. The effectiveness of BMPs would be based on empirical studies, modeling results, expert advice, etc., taking into consideration prerequisite conditions, interdependencies, and potential synergistic (positive and negative) effects. BMP effectiveness ratings could be translated into factors for the calculator. For a policy scenario, the calculator would estimate an overall effectiveness in VMT and GHG reductions which could possibly be translated into points for comparison or target achievement purposes.

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This type of calculator could be developed and tested for use by 2010. It is recommended that CARB commission the development of a BMP calculator, and that it be placed in the public domain free of charge for all stakeholders.

In developing the BMP calculator, a set of criteria should be considered. Some of these criteria would include:

- identification and accounting for synergistic (positive and negative) effects;
- ability to analyze strategies on a regional, local, or project level;
- financial constraints;

[resource constraints](#)
[air conformity consistency](#)

- fuel prices; and
- information from peer reviewed publications.

Capabilities and limitations of BMP option

RTAC members carefully examined the capabilities and limitations of the BMP option and recommended a dual-path approach to allow both the modeling and the BMP approach to play a role in target setting as well as SCS compliance demonstration with full recognition of the options capabilities and limitations. The following summarizes the discussions at RTAC meetings on this topic:

Future application

Although the BMP option is currently recommended as an interim option while integrated land use and transportation models and input data quality are being developed and/or improved, through its first round of applications it may turn out to be a valuable tool worth preserving. It is recommended that the BMP along with its calculator be used as a screening tool for the foreseeable future. If the results from the calculator equal or exceed the SB375 target(s) plus an uncertainty adder, the proposed SCS could be deemed in compliance with the SB375 requirements without running the full regional model (i.e., screening tool). It may provide a cost-effective alternative for compliance demonstration by MPOs.

As SB 375 is implemented, data collection technologies such as global positioning system (GPS), should be deployed to garnish additional in-use information that could serve as performance checks on the efficacy of various strategies. This information can be analyzed with the BMP calculator or the more sophisticated models.

5. Flexibility in Achieving Targets

The Committee recommends that ARB allow for flexibility to implement innovative land use and transportation strategies to help meet the targets. As such, it is appropriate for

23 MPOs to use, with sufficient documentation, greenhouse gas reductions that [are not on CARB's list of BMPs, or](#) go beyond the benefits from state actions to meet their target and receive credit for local/regional

innovation. For this to be successful, ARB should communicate to MPOs and others what its expectations are with regards to creditable strategies and submission of strategy documentation [to determine the accuracy of various methodologies that may be proposed.](#)

6. Target Metric

The Committee recommends that ARB express the targets in terms of a percent reduction in per capita greenhouse gas emissions. This metric is preferred for its simplicity, since it is easily understood by the public, can be developed with currently available data, and remains a widely used metric by MPOs today.

In addition, this form of metric has the advantage of directly addressing growth rate differences between MPO regions. Addressing growth rate differences between the MPO regions is important given that growth rates are expected to affect the magnitude of change that any given region can achieve with land use and transportation strategies. More growth equals more opportunities to affect the travel patterns of future households, as well as existing households. The relative characteristic of the metric

ensures that both fast and slow growth regions take reasonable advantage of any established transit systems and infill opportunity sites to reduce their average regional greenhouse gas emissions.

Furthermore, this target metric also gives “credit” or consideration of early actions in the target setting process. The percent reduction characteristic of the metric gives regions that have taken early actions and, as a result have a low level of greenhouse gas emissions per person, responsibility for a lower total amount of reductions compared to regions that start with a high level of greenhouse gas emissions per person.

7. Accounting for Statewide Fuel and Vehicle Technology

The Committee recommends that ARB provide MPOs with information on the anticipated greenhouse gas emission reduction impacts of the adopted Pavley regulation and Low Carbon Fuel Standard (LCFS). SB 375 requires ARB to take into account improved vehicle emission standards, changes in the carbon-intensity of fuels and future measures to further reduce GHG emissions from these sources when setting the targets, in addition to reductions from other sources. Given ARB’s expertise in the models and tools to evaluate the Pavley regulation and LCFS and its responsibility for their statewide implementation, it is the appropriate agency to provide information on the benefits of these measures to the MPOs. This information will enable the MPOs to account for these benefits in a consistent manner across the state. ARB should also provide to the MPOs the potential benefits of future measures to further increase fuel efficiency and shift the state’s transportation fuel mix.

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8. Base Year

The Committee recommends a current base year of 2005, such that MPOs would be required to achieve emissions reductions equivalent some percentage below their 2005 per capita levels by 2020 and 2035. A current base year is preferred over a future base year since it relies on recent, existing information and is less sensitive to varying assumptions. Although 1990 was discussed as a potential base year to be consistent with AB 32, MPO representatives indicated regional greenhouse gas data does not exist to support its use as a base year. Additionally, many of the most recent RTPs and Blueprint scenarios have modeled year 2005 as a base year, which would reflect current conditions between regions.

Should we discuss how a reduction from a 2005 base year converts or relates to total reductions sought in the scoping plan?

9. 2020 and 2035 Targets

The Committee recommends that ARB use a consistent target setting methodology for the 2020 and 2035 targets. Transportation and pricing strategies may realize considerable GHG emission benefits in the near-term (i.e., 2020), while improved land use planning initiated in the near-term may achieve its most significant GHG benefits over the long-term (i.e., 2035). Therefore, the factors considered in development of the 2020 target may necessarily be different than those for the 2035 target. The methodology to develop those targets, however, should be consistent to provide certainty to MPO planning efforts and comparability between the 2020 and 2035 targets.

10. Statewide Assumptions

The Committee recommends that ARB require MPOs to use consistent key assumptions across the state. Model outputs vary with differing model input assumptions, especially for those to which a model is most sensitive. Certain key assumptions therefore should be consistent statewide to ensure equitable assessments of MPO model outputs, including scenarios. For instance, ARB should recommend a range of gasoline prices for use by MPOs in their transportation models. ARB also could recommend consistent assumptions for use when developing population and employment projections.

12. Achievability and Ambitiousness of Targets

Several RTAC members emphasized the importance of achievability of the targets to show early success in implementing SB 375. There was also discussion of the pros and cons of setting targets that would be primarily met through sustainable communities strategies rather than alternative planning strategies. Lastly, there was recognition that a balance of achievability and ambitiousness is needed. With respect to ambitiousness of targets, there was general support for a method of target setting that supports actions well beyond the status quo.

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IV. RTAC Recommendations and Comments on Implementation

New Authorities

1. New Regional Authority to Raise Revenue and Promote Efficient Development

The responsibility for developing a Sustainable Communities Strategy falls on Metropolitan Planning Organizations (MPOs) as well as local governments. While many MPOs have put in place exemplary policies and visions to create additional transportation choices, significant proportions of their operating budgets are committed to maintenance and operation of existing systems, and only a small percentage is typically available to create new transportation options. Similarly, local government planning funding is in short supply, and existing planning staffs are struggling to keep pace with current planning demands, leaving little capacity for comprehensive, sustainable long range planning. Both entities would benefit from additional funding and other mechanisms to realize their visions for mixed-use, walkable communities with transportation options.

2. New Revenue Mechanisms

During RTAC meetings, the most frequently cited barriers to successful SB 375 implementation were cuts to public transit funding, and the lack of funds for jurisdictions to create new community-based plans, change zoning and do programmatic environmental reviews. Other important programs that many MPOs are implementing or may want to as part of their SCS, such as employee commute incentives, bicycle infrastructure or transit-oriented development funding programs, also have insufficient funding. The RTAC recommends that the state grant new authorities that will help

regions reach their GHG targets. The authority for new revenue mechanisms may either be given directly to an MPO or COG, or it could allow them to bring proposals to the voters in the form of regional ballot measures (as fees they would require a simple majority vote). Some of the primary mechanisms could include:

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3. A Carbon Impact Fee on Vehicles or Gasoline

The value of the current gas tax has been declining significantly, and is part of the reason for current transportation shortfalls. Similarly, vehicle license fees can provide a sustainable new source of funds. A timely example is SB 406 (DeSaulnier), a bill currently making its way through the Legislature that would give all California MPOs and COGs the authority to impose a \$1 or \$2 VLF and dedicate the proceeds directly to regional and local planning.

4. Express Lanes and Congestion Pricing

Congestion imposes large costs on drivers, the economy and the environment. Congesting pricing programs that charge drivers for travel in congested corridors, and use generated funds to promote additional transportation choices, can have broadly beneficial outcomes. In both Southern California and the Bay Area, recent proposals would allow single-occupancy vehicles to enter carpool lanes during rush hour for a fee (known as express or high-occupancy toll lanes).

Currently, regions wishing to implement climate impact fees, congestion pricing or (changes to bridge tolls in the Bay Area) must usually go through an onerous legislative process before they can even ask voters to adopt new fees. The RTAC urges the Legislature to make it easier for MPOs, COGs and local transportation agencies to adopt new revenue mechanisms and pricing programs that would explicitly be used for reducing GHGs while improving transportation and economic efficiency.

5. New Authority for Indirect Source Review for GHG Emissions

Indirect Source Review (ISR) is a measure pioneered in the San Joaquin Valley, that helps developers improve the design and sometimes location of their developments, in order to meet pollution thresholds set by their local air district. ISR considers the indirect pollution caused by vehicles linked to the development and energy used by the project, both during construction and over the life of the project's operation. The developer is responsible for mitigating the pollution that exceeds the thresholds, either through on-site improvements such as adding shuttles or increasing pedestrian connectivity, or by contributing a fee for off-site mitigations. These mitigations can fund planning, implementation of infill development or other community benefits such as new transit routes that are shown to significantly reduce emissions. Several California air districts have already adopted similar programs for criteria pollutants. The ARB should provide guidance that would allow air districts to implement ISR for GHG pollution as a way to implement SB 375.

For all of these mechanisms, guidelines should be developed for how these fee programs are structured and implemented, as well as the use of revenues, to avoid regressive impacts on low-income drivers and ensure that revenues flow to proven VMT reduction programs and projects. As with provisions in SB 375, these new programs

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could be specifically designed, and limited to, mechanisms that are identified as part of the Sustainable Communities Strategy or Alternative Planning Strategy.

Local Government Barriers

The Scoping Plan uses the term “essential partner” when describing the important role that local government will play in achieving reductions in GhG emissions. SB 375 poses a new set of challenges for local government and the findings correctly state that “local governments need a sustainable source of funding to be able to accommodate patterns of growth consistent with the state’s climate, air quality, and energy conservation goals.” The challenge will be to reconcile these goals with the responsibility of local governments to create safe, healthy, economically diverse, and fiscally sound communities.

1. The Growth Issue

Cities and counties are required by the state to provide housing for a growing population and they must continue to *grow* their local economies in order to pay for infrastructure and services and provide local jobs while they work to *reduce* carbon emissions. SB 375 is not a “no growth” bill and should not be implemented in a manner that turns it into one. Local agencies will need tools, such as education, retraining, and loans and credits to make a smooth transition. Without such resources, it will be difficult to ask local elected officials to make decisions that may reduce emissions while placing their communities and the state at an economic disadvantage.

2. The Planning Problem

SB 375 adds new planning requirements for MPOs, but it does not appropriate any new funds. A companion bill, SB 732 may make \$90 million available for MPOs and local governments for “sustainable planning,” but this is not nearly enough when a typical general plan (including public outreach and CEQA review) can exceed \$500,000 in a small community and millions in larger ones. Planning departments are reliant on developer fees to fund staff positions. In the current economy, many have had to cut back staff—precisely at the time more planning is needed if SB 375 is to live up to its promise.

3. The Infrastructure Problem

Mixed-use, higher density development in infill areas must often overcome deficiencies in existing infrastructure such as inadequate sewer or water capacity. Other infrastructure needs can include items such as fire equipment that can make seventh story rescues, walkable paths, usable bike lanes, parks, sufficient police enforcement, and quality schools. California’s fiscal structure severely constrains the ability of local agencies to raise revenues to address these needs. Developers can only be required to pay their proportional share of the impact, not for repairing existing deficiencies. And it

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is virtually impossible for local agencies to get voter approval on measures that require a two-thirds majority for any reason, let alone to support new development.

4. Conflicting State Mandates and Policies

The state must develop an approach to reconciling conflicting mandates and policies. The most recent example of conflicting state policies is the disconnect between a emissions reduction strategy that encourages infill in built out areas and the state budget that raids the best source of funding such development: redevelopment dollars. Another example is the conflict between reducing greenhouse gas emissions by locating more housing within existing transit corridors and the public health risk caused by existing air particulates in these same areas. Similar conflicts will arise with state housing policy, coastal or farmland preservation goals, and a number of other policies.

5. Making it Understandable

As the branches of government closest to the people, it will often be up to city and county officials to act on and explain the reasons for carbon saving strategies.. These officials will need support in developing reports and information and packaging it in a way that the broader public can easily understand. If the public is confused or cannot draw a connection between the action taken and the benefits to the community, they are likely to object and register their dissatisfaction next time they vote.

6. Resource Realignment

The resources needed to make these land- use changes and transportation strategies work, must be realigned to flow to those cities with general plans and programs that are consistent with regional plans.

Not maintenance dollars – infrastructure that supports growth and change

RTAC recommends that ARB considers these constraints as revenue sources become available and work with other state, regional, and local agencies to seek fiscal and other systemic solutions to these constraints.

To the extent that any ARB programs result in new revenues and revenue sources, ARB should consider directing a significant portion of these revenues to cover these problems, particularly given the potential for land use and transportation emissions reduction to contribute to the 2050 reduction and the other co-benefits for air quality, community health, and social equity identified in this document.

State Actions to Support Implementation

The RTAC recommends the State consider the following actions to support the implementation of SB 375.

1. Transit Funding

Address the discontinuity between the elimination transit funding in the budget and mandates of SB 375. Public transit is a key tool in reducing greenhouse gas emissions. The state of California has approved mandates to reduce greenhouse gas emissions but has eliminated funding for public transit in the state budget. The state should ensure that its budgets are consistent with its policies on greenhouse gas reductions.

1.5 Infrastructure Funding

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2. Infrastructure, Redevelopment & Planning Funding

Restore and make permanent redevelopment funds.

Support infrastructure modernization funding to overcome imbedded disincentives to redevelopment.

Encourage the Strategic Growth Council to expedite the distribution of Prop 84 funds to assist state and local entities in the planning of sustainable communities.

Adopt SB 406 providing the local authority to impose a surcharge on motor vehicle registration for the purpose of developing a sustainable communities strategy.

3. Affordable Housing Funding [Funding Tools](#)

Pass SB 500 to provide a permanent funding source for affordable housing.

4. Regulatory Tools

Provide additional tools for local governments to achieve GHG reduction targets (i.e. enabling fuel fees, allowing road and congestion pricing).

5. Modeling Improvements

State support in obtaining funding for MPOs to develop and implement enhanced models, including activity-based model, land use model, 4-D models, and advanced air quality modeling tools.

State support for standardizing modeling assumptions such as consistent methodologies for estimating gasoline price and fuel efficiencies.

Conduct a Statewide Year 2010 Household Travel Survey to support development of enhanced modeling tools. The survey needs to be comprehensive and of sufficient detail for MPOs to develop/enhance Regional Models (including Activity-Based Models). A focused statewide approach towards household surveys will not only benefit all MPOs from the economy of scale (larger sample size at lower cost) but will also elevate the expertise and survey quality.

State support for an integrated Statewide travel demand and land use model to address inter-regional travel and provide a platform for MPO model enhancement and collaboration.

State support to develop and automate a statewide data system to support both the State's and MPOs' modeling efforts. Example - Enhanced VMT forecasting tools and supporting data, HPMS, and enhanced traffic count program.

State support for a state body to facilitate the development of travel demand model development guidelines and model validation standards for use by California MPOs. In addition, the body would develop a set of evaluation criteria to enhance the Model Peer Review process.

State support for establishing a statewide metropolitan cooperative research program. Large costs are involved in both improving current and developing more advanced models. Rather than having these costs duplicated at each MPO, it would be beneficial to pool resources for such activities as enhancements of existing

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models, development of new models, implementation procedures, and staff training programs.

6. Other

Conduct a statewide housing market survey.

Some examples of stakeholders and organizations that should be included in public outreach:

STATE

Office of the Governor
 Air Resource Board
 California Council of Governments
 Resource Agencies
 Caltrans
 Department of Housing and Community Development
 California Health Department
~~California League of Cities~~ [League of California Cities](#)
 California State Association of Counties
 LAFCO's

4. Conclusion

Substantive change starts with education. The public has to be aware and understand the environmental, economic and cultural benefits of sustainable communities; thinking about what we do today and how it affects our state tomorrow will help promote healthier living and informed decision-making. Educating the public on SB 375 provides an opportunity to emphasize community responsibility for achieving balance between land development, transportation choices and preserving natural resources, for future generations.

Flexibility in Designing Strategy

Consistent with SB 375 and the Scoping Plan, the RTAC recognizes that flexibility in designing strategies will be an important tool for reducing greenhouse gas emissions from passenger vehicles and light-duty trucks. As noted on page 48 of the Scoping Plan, "SB 375 maintains regions' flexibility in the development of sustainable communities strategies...The need for integrated strategies is supported by the current transportation and land use modeling literature." It is a strong recommendation from the RTAC that the Board and CARB staff provide the MPOs with the flexibility to incorporate relevant local and regional measures which allow the MPO's to meet the ambitious and achievable targets appropriate to the region's unique characteristics.

The "bottom up" approach to regional planning (as exemplified by the SACOG Blueprint process) has proven to be the model that provides the flexibility that will be important for successful implementation of SB 375. Inherent in this approach is that each of the regions are able to develop strategies that fit the profile of the region in terms of demographics, economic development, market preferences, infrastructure, growth and the built environment. Central to the "bottom up" approach, as well, is the retention of local land-use decision making. It will be critical for the local governments to "buy-in" to the strategies developed to meet the greenhouse gas reduction targets and the collaborative nature of the Blueprint process involves the cities, counties and community to a great extent.

timeframes involved in changing land use patterns and allowing for the type of development local governments will encourage in order to recognize the greenhouse gas reductions from urban infill, transit-oriented, and other master-planned community type developments. The first milestone in the timeline will be the setting of the regional targets, followed by the MPOs preparation of the Sustainable Communities Strategies (SCS). Each region will be required to perform a detailed and complete EIR for their SCS. Upon certification of the EIR for the SCS by the MPO, most local governments will need to amend their general plan and do the necessary zoning and re-zoning to accommodate the [land-use/housing need in addition to any changes they may elect to do to bring their general plans in line with the SCS \(or alternatively, the APS\)](#) ~~and also provide a subsequent EIR covering their updated general plan (some cities may have general plans and zoning consistent with the land uses spelled out in the SCS and may not have to go through this step).~~

The general plan update and zoning changes will allow for a consistent project to be proposed and to begin the project entitlement process. Once the project is approved, it can begin seeking financing for the development costs and then pre-selling the required number of units in order to allow for construction to begin and the project built. Due to this timeframe (see below), which can take from 9-12 years in total, regions will need the flexibility to employ other GHG reduction measures in order to meet the 2020 targets.

The RTAC recognizes the unique nature of each of the different regions and that a one-size fits all approach to implementing regional strategies to achieve greenhouse gas reduction targets is not appropriate. By providing flexibility, CARB recognizes the different characteristics, capabilities and resources of the state's regions and allows those regions to meet the most ambitious and achievable targets with strategies that are appropriate for the region.

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Timeline

Aggressive Expected Possible

1) Targets get set Sept 2010 Sept 2010 Sept 2010

2) SCS gets developed Sept 2011 Sept 2011 Sept 2012
Growth Forecasts
RTP Scenarios
RHNA Forecasts
Alternatives Analysis

3) EIR on SCS Dec 2011 March 2012 Sept 2014

4) SCS approved June 2012 March 2013 Sept 2015

5) Local general plans updated [to account for housing allocations](#), June 2013 March 2015 Sept 2018
new zoning or rezoning

6) EIR on [general plan/housing and related elements](#) update Dec 2013 March 2016 Sept 2020

7) Project proposed June 2014 March 2017 Sept 2021

8) Entitlement process June 2015 March 2019 Sept 2025

9) Project financing, marketing Dec 2015 June 2020 Sept 2027

10) Project built Dec 2017 June 2022 Sept 2032

Co-benefits of Sustainable Communities Strategies [h26]

Literature suggests that there may be some correlation between the best management practices that will yield GhG reductions and other benefits. For example, , housing units built at higher densities near transit and with supporting wrap around infrastructure of parks, schools, and commercial opportunities will encourage resident health by promoting greater walking. ~~Communities that are well designed and supported by a range of transportation options will significantly reduce greenhouse gas emissions and contribute towards climate change solutions.~~ In addition, many other advantages can result including increased mobility, economic benefits, reduced air and water pollution, and healthier, more equitable and sustainable communities. However, this nexus must be taken into context: one RTAC member related the experience in his community that locating more housing in transportation corridors would actually increase health problems because of the increased air particulates in those areas.

The RTAC recommends that CARB seek to identify these relationship and examine the circumstances when they are most likely to yield co be-benefits related to other state policy goals: identify, quantify to the extent possible, and highlight these co-benefits throughout the SB 375 target setting and implementation processes. Co-benefits include the following:

NOTE as comments provided below detail – this section states a bunch of simplistic assumptions about the value of growth. But in the real world, the advantages are not so clear cut. I think it weakens the overall report to state these gains simply without recognizing that they will not work in every instance.

1. Increased Mobility

Congestion Relief – Fewer cars on the road results in less congestion, which has a number of benefits and helps to improve quality of life. ~~But doesn't less congestion encourage the use of more cars as well? In turn, reduced congestion can also encourage use of an automobile if it is more convenient than options~~

More Transportation Choices – Greater investment in a balanced transportation system and transit-oriented developments can provide increased use of public

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transportation, and sustainable, healthy transportation options such as walking and bicycle riding.

Reduced Commute Time and Increased Productivity – Homes closer to job centers can reduce commute time and distance, especially if other modes of transportation are available. People can save time by not sitting in traffic commuting.

~~Public transit provides the opportunity for relaxing or getting work done. Mixed use communities also mean more opportunities to shop and access daily needs near home, saving additional travel time.~~

2. Economic Benefits

Savings – Taking public transit and driving less can save individuals money for

fuel costs. Infrastructure/operating costs for transit can also decrease when such costs are spread among an increased number of riders.

Taxpayer Savings – Services such as maintaining sewer systems, and police and fire services can be more efficient and cost less if they cover more people in less space. However, infrastructure funding shortfalls often make it more expensive to create compact development patterns within existing urban footprints

Neighborhood Economic Development – Increasing density puts more residents within walking distance of neighborhood businesses, providing opportunities for neighborhood economic development. This assumes there are neighborhood businesses there, and they are worth walking too. Not always the case

3. Reduced Air and Water Pollution

Less Air Pollution – Reducing the number and length of car and truck trips means less pollution that directly or indirectly creates summertime smog and particulate pollution. Harmful pollution that can cause cancer and other health problems are greatly reduced. However, existing transit corridors may have higher rates of pollution

However, putting more people in transit friendly areas often exposes them to higher particulates and in some cases is actually discouraged and even prohibited under the clean air act. We can't be so general about these assumptions.

Improved Water Supply and Quality – Compact development can reduce water use and put less strain on sewer systemstreatment plants. However, higher density, compact development in infill areas can strain existing older infrastructure if it was not constructed for such and intense use. Water quality can also be improved because run off can be filtered by natural lands instead of paved surfaces. Assuming of course, there is plenty of natural lands nearby to filter.

4. Healthier, More Equitable and Sustainable Communities

More Opportunities for Active Lifestyles – Increased walking and bicycle riding can contribute to cardiovascular fitness and weight control, both of which can make people healthier and increase quality of life. Increased physical activity can reduce a number of chronic health risks such as obesity, diabetes, heart disease, cancer and depression.

Less Dependence on Foreign Oil – Using alternative means of transportation and alternative forms of energy and fuel will reduce our dependence on foreign oil, which can help add to national security and economic stability.

Improved Safety – Thriving, walkable neighborhoods mean more people on the street, helping to improve safety and discourage unlawful activity.

Greater Housing Choices – Communities can be designed to include a mix of housing options, which can better meet a growing market demand for a variety of

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housing types. Recent studies indicate that homebuyers are willing to pay a premium to live in a walkable community.

Preservation of Farmland, Habitat and Open Space – Dense, mixed-use communities can encourage infill and Brownfield redevelopment, thereby preserving open space, farmland and wildlife habitats.

More Equitable Communities – Social equity issues can be partially addressed by improving local access and transportation to nutritious foods and health care services that are often out of reach in low income communities and communities of color.

5. Recommendations on Addressing Co-Benefits in the SCS and in the Target Setting Process

Make the advancement of co-benefits a key goal in the RTAC's process for setting regional targets. The target setting process should provide a vision for what can be accomplished in terms of healthier, more active communities, and demonstrate pathways to achieve these goals.

Both regions and CARB should quantify, to the extent possible, the range of co-benefits associated with the achievement of their GHG reduction targets, as a means of increasing public understanding and support.

Promote the development and use of planning models that can accurately estimate the potential global warming and co-benefits of various land use scenarios in the development of the targets and the SCS.

Performance Indicators

To ensure that SB 375 implementation results in the level of land use and transportation changes needed to achieve our state's emission reduction goals, the Committee recommends that a standard set of performance indicators be developed for the state's use in evaluating whether a given MPO's SCS/APS plan is likely to meet its target, as well as for establishing the basis for a monitoring system that would track MPO plan performance over time.

This set of performance indicators should be developed such that they balance the need for comprehensiveness in measuring the impacts of land use, transportation, pricing, TDM/TSM, and any other MPO plan policies, but also recognize the ability of MPOs to collect and provide the requested data. Below are examples of performance indicators that should be considered for these purposes:

State Indicators:

Percentage increase in funding or number of new programs to increase funding for planning that is consistent with state environmental and housing goals

Percentage increase in funding or number of new programs to increase funding and opportunities for infill infrastructure, including Brownfield remediation and infill infrastructure improvements

Percentage increase in funding or number of new programs to increase funding and opportunities for transportation

Percentage increase in funding or number of new programs to increase funding and opportunities for healthy communities

Percentage increase in funding or number of new programs to improve school quality in infill areas designated for sustainable growth

[h29]

Land Use:

- Land use distribution
- Development density
- Land use mix
- Urban design/pedestrian environment
- Destination accessibility
- Average residential densities
- Average residential + employment densities
- Housing product mix (% of new dwellings (attached, small lot detached, and large lot detached))
- Land use mix (% of new development infill, redevelopment, Greenfield)
- Housing units within X distance of transit with Y service

Transportation:

- Average cost of transit fares
 - Number of lane miles
 - Centerline miles per square mile (to analyze walkable street patterns)
 - % of non-highway roads with sidewalks
 - % of non-highway roads with bike lanes
 - Funding priorities (% of funding for new capacity projects, for transit projects, for road maintenance, for transit operations, for non-motorized transportation, other)
 - Mode split (% trips auto, transit, bike, walk)
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- Speed-related impacts (% of VMT at different speeds)

Pricing:

- Daily cost of driving
- Speed-related impacts (% of VMT at different speeds)

TDM/TSM:

These are often finite programs that often must be evaluated separately. Impacts are difficult to estimate. After-the-fact empirical data must be compiled. Such as:

- For employer-based trip/VMT programs: employer participation levels accompanied by employee commute surveys.
- For school-based programs: school participation levels accompanied by student/family trip surveys.
- For TSM programs: Speeds and congestion incidents monitored before and after TSM programs.

Perhaps put place in level of funding

Model Enhancements

The Committee recommends that the state, MPOs, and other key stakeholders work together to enhance the existing models and develop new ones that help predict with better accuracy the emission reductions a specific region can expect to achieve. The ability of models to accurately estimate greenhouse gas emission reductions and to quantify benefits from any given combination of policies or strategies will be critical for implementing SB 375. Currently, there are a variety of models used by MPOs.

In the near term, MPOs need to assess existing modeling capabilities to determine if their models are, or can be made, sensitive to land use and transportation policies in each region. If not, MPOs could benefit from using off-model tools to help quantify policies.

A long-term key modeling enhancement the Committee supports is activity-based modeling to forecast travel demand. Most models currently use trip-based models which are less sensitive and less reliable for modeling actual travel behavior. Other enhancements the Committee supports include the increased sensitivity to the effects of density and mixed-use development, the effects of a balanced job-housing balance, and ensuring models are sensitive to all modes of travel including bicycle, pedestrian and transit.

To support enhanced models, the Committee recognizes MPOs would need to identify any existing data gaps and the need for data collection. This could include using regional empirical data to verify the accuracy of modeled predictions of policies and strategies.

Improving models and data collection is not free. ARB, as well as other state entities and the Legislature, need to consider the costs and resources required for this effort. At an aggregate level, the state is expected to provide financial assistance as well as data resources including statewide household surveys. These considerations should also be considered during the California Transportation Commission's RTP Modeling Guidelines updates.

We also recognize a new generation of transportation and land use modeling capabilities is a long-term prospect, and the degree to which urban and rural regions will use these enhancements will vary. Therefore, the Committee does not anticipate these improvements being ready for all MPOs to use during the first round of regional transportation plans prepared under SB 375. However, we recommend these enhancements play an integral part of SB 375 implementation beginning with the second regional transportation plans prepared under this law.